CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-17 (canceled).

Claim 18 (currently amended). A method for detecting a check-back signal in an optical transmission system for optical signals, comprising:

concentrating a constant proportion of a output in a defined frequency range of the check-back signal in a ~~narrow-band~~ predetermined spectral range;

feeding the check-back signal into the transmission system at the sending end; decoupling the check-back signal after a section of the transmission system;

modulating, amplifying and filtering the decoupled check-back signal to isolate the ~~narrow-band~~ predetermined spectral range of the check-back signal; and

determining the output of the isolated ~~narrow-band~~ predetermined spectral range for the detection of the check-back signal, wherein the amplification of the check-back signal decoupled from the transmission system is linear and ~~not limited in amplitude,~~ an amplitude limiting process is not performed on the check-back signal so that if there is a high proportion of

noise, the check-back signal is still detected in the ~~narrow-band~~ predetermined spectral range;

wherein a concentration of a constant proportion of the output of the check-back signal is created in the predetermined spectral range by evenly distributing ones and zeros from data of the check-back signal, followed by encoding.

Claim19 (currently amended). The method according to claim 18, wherein ~~the concentration of a constant proportion of the output of the check-back signal is created on a narrow-band spectral range by evenly distributing ones and zeros from data of the check-back signal, followed by encoding~~ the predetermined spectral range is a narrowband spectral range.

Claim 20 (currently amended). The method according to ~~claim 19~~ claim 18, wherein scrambling is used to evenly distribute ones and zeros from the data of the check-back signal and then a CMI or RZ encoding is used to create a spectral line.

Claim 21 (previously presented). The method according to claim 18, wherein the opto-electric modulation and the amplification of the decoupled signal is provided at least for the data bandwidth of the check-back signal.

Claim 22 (previously presented). The method according to claim 21, wherein after the opto-electric modulation and the amplification of the decoupled signal, an additional regeneration of the check-back signal is provided.

Claim 23 (currently amended). A method for determining a line discontinuity in a transmission system, comprising:

concentrating a constant proportion of a output in a defined frequency range of the check-back signal in a ~~narrow-band~~ predetermined spectral range;

feeding the check-back signal into the transmission system at the sending end;

decoupling the check-back signal after a section of the transmission system;

modulating, amplifying and filtering the decoupled check-back signal to isolate the ~~narrow-band~~ predetermined spectral range of the check-back signal;

determining the output of the isolated ~~narrow-band~~ predetermined spectral range for the detection of the check-back signal, wherein the amplification of the check-back signal decoupled from the transmission system is linear and ~~not limited in amplitude,~~ an amplitude limiting process is not performed on the check-back signal so that if there is a high proportion of noise, the check-back signal is still detected in the ~~narrow-band~~ predetermined spectral range;

determining an output level of the isolated ~~narrow-band~~ predetermined spectral range of the check-back signal; and

detecting a line discontinuity in the transmission system when an output level is below a preset threshold, wherein a pump source arranged in the section of the transmission system to make the necessary amplification of the optical signals is switched off when the system is in operation or when the

system is not in operation it remains switched off and wherein if no line discontinuity is determined, the pump source is switched on;

wherein a concentration of a constant proportion of the output of the check-back signal is created in the predetermined spectral range by evenly distributing ones and zeros from data of the check-back signal, followed by encoding.

Claim 24 (previously presented). The method according to claim 23, wherein check-back signals from a counter-directional or co-directional or bidirectional monitoring channel of the transmission system are used for counter-directional or co-directional or bidirectional pumps from one or several pump sources for transmission direction.

Claim 25 (withdrawn). A method for measuring the transmission attenuation, comprising:

concentrating a constant proportion of a output in a defined frequency range of the check-back signal in as narrow-band spectral range as possible;

feeding the check-back signal into the transmission system at the sending end;

decoupling the check-back signal after a section of the transmission system;

modulating, amplifying and filtering the decoupled check-back signal to isolate the most narrow-band spectral range possible of the check-back signal; and

determining the output of the isolated narrow-band spectral range for the detection of the check-back signal, wherein the amplification of the check-back signal decoupled from the transmission system is linear and as far as possible unlimited in amplitude, so that if there is a high proportion of noise, the check-back signal is still detected in the narrow-band spectral range; determining the output level of the isolated narrow-band spectral range of the check-back signal; determining a value of an amplification following the opto-electric modulation, wherein by delivering the output level and the determined value of the amplification, the transmission attenuation is measured at an evaluation unit.

Claim 26 (currently amended). An arrangement for implementing a method for detecting a check-back signal in an optical transmission system for optical signals, the method comprising the following steps:

concentrating a constant proportion of a output in a defined frequency range of the check-back signal in a ~~narrow-band~~ predetermined spectral range;

feeding the check-back signal into the transmission system at the sending end;

decoupling the check-back signal after a section of the transmission system;

modulating, amplifying and filtering the decoupled check-back signal to isolate the ~~narrow-band~~ predetermined spectral range of the check-back signal; and

determining the output of the isolated ~~narrow-band~~ predetermined spectral range for the detection of the check-back signal, wherein the amplification of the check-back signal decoupled from the transmission system is linear and ~~not limited in amplitude,~~ an amplitude limiting process is not performed on the check-back signal so that if there is a high proportion of noise, the check-back signal is still detected in the ~~narrow-band~~ predetermined spectral range, wherein

the arrangement comprising:

an optical waveguide for transmitting optical signals, wherein in a first section of the optical waveguide, a first coupler is arranged to couple a check-back signal, to which coupler an encoding module is connected in series for concentrating a constant proportion of the output of check-back signal in ~~as narrow-band~~ a predetermined spectral range ~~as possible~~,

wherein in a further section of the optical waveguide, a decoupler is placed to bifurcate the check-back signal from the optical waveguide,

wherein the decoupled check-back signal is directed via an opto-electric modulator and further via a gain controller to a narrow-band band-pass filter for isolating the ~~narrow-band~~ predetermined spectral range of the decoupled check-back signal, and

wherein a measuring module is subsequent to the band-pass filter; and

wherein a concentration of a constant proportion of the output of the check-back signal is created in the predetermined spectral range by evenly

distributing ones and zeros from data of the check-back signal, followed by encoding.

Claim 27 (currently amended) An arrangement for implementing a method for determining a line discontinuity in a transmission system, comprising:

concentrating a constant proportion of a output in a defined frequency range of the check-back signal in a ~~narrow-band~~ predetermined spectral range;

feeding the check-back signal into the transmission system at the sending end;

decoupling the check-back signal after a section of the transmission system;

modulating, amplifying and filtering the decoupled check-back signal to isolate the ~~narrow-band~~ predetermined spectral range of the check-back signal;

determining the output of the isolated ~~narrow-band~~ predetermined spectral range for the detection of the check-back signal, wherein the amplification of the check-back signal decoupled from the transmission system is linear and ~~not limited in amplitude,~~ an amplitude limiting process is not performed on the check-back signal so that if there is a high proportion of noise, the check-back signal is still detected in the ~~narrow-band~~ predetermined spectral range;

determining an output level of the isolated ~~narrow-band~~ predetermined spectral range of the check-back signal; and

detecting a line discontinuity in the transmission system when an output level is below a preset threshold, wherein a pump source arranged in the

section of the transmission system to make the necessary amplification of the optical signals is switched off when the system is in operation or when the system is not in operation it remains switched off and wherein if no line discontinuity is determined, the pump source is switched on, wherein

the arrangement comprising:

an optical waveguide for transmitting optical signals, wherein in a first section of the optical waveguide, a first coupler is arranged to couple a check-back signal, to which coupler an encoding module is connected in series for concentrating a constant proportion of the output of check-back signal in ~~as narrow-band~~ a predetermined spectral range ~~as possible~~,

wherein in a further section of the optical waveguide, a decoupler is placed to bifurcate the check-back signal from the optical waveguide,

wherein the decoupled check-back signal is directed via an opto-electric modulator and further via a gain controller to a narrow-band band-pass filter for isolating the ~~narrow-band~~ predetermined spectral range of the decoupled check-back signal, ~~and~~

wherein a measuring module is subsequent to the band-pass filter, and

wherein a concentration of a constant proportion of the output of the check-back signal is created in the predetermined spectral range by evenly distributing ones and zeros from data of the check-back signal, followed by encoding.

Claim 28 (currently amended). The arrangement according to claim 27, wherein a first coupler for coupling a check-back signal is arranged in a first

section of the optical waveguides, to which coupler an encoding module is connected in series to concentrate a constant proportion of the output of the check-back signal in ~~as narrow-band~~ a narrow spectral range ~~as possible~~,

wherein in a further section of the optical waveguide there is placed a decoupler for bifurcating the check-back signal from the optical waveguide,

wherein the decoupled check-back signal is fed to a narrow-band band-pass filter for isolating the ~~narrow-band~~ spectral range of the decoupled check-back signal via an opto electric modulator and further via a gain controller, and

wherein a measuring module is subsequent to the band-pass filter,

wherein at least a second coupler for feeding in at least one pump signal from a pump source is connected in series to the decoupler,

wherein the measuring module has an amplifier and a rectifier for determining an output level after at least two gauge readings from the isolated ~~narrow-band~~ spectral range, and

wherein subsequently a threshold detector is connected to the rectifier, and the output signal of the threshold detector is directed to a switch for switching the pump signals of the pump source on or off.

Claim 29 (withdrawn). An arrangement for implementing a method for measuring the transmission attenuation, the method comprising the following steps:

concentrating a constant proportion of a output in a defined frequency range of the check-back signal in as narrow-band spectral range as possible;

feeding the check-back signal into the transmission system at the sending end;

decoupling the check-back signal after a section of the transmission system

modulating, amplifying and filtering the decoupled check-back signal to isolate the most narrow-band spectral range possible of the check-back signal; and

determining the output of the isolated narrow-band spectral range for the detection of the check-back signal, wherein the amplification of the check-back signal decoupled from the transmission system is linear and as far as possible unlimited in amplitude, so that if there is a high proportion of noise, the check-back signal is still detected in the narrow-band spectral range;

determining the output level of the isolated narrow-band spectral range of the check-back signal;

determining a value of an amplification following the opto-electric modulation, wherein by delivering the output level and the determined value of the amplification, the transmission attenuation is measured at an evaluation unit, wherein

the arrangement comprising:

a first coupler for coupling a check-back signal arranged in a first section of the optical waveguide, to which coupler an encoding module is connected in series for concentrating a constant proportion of the output of the check-back signal in as narrow-band spectral range as possible,

wherein a decoupler for bifurcating the check-back signal from the optical waveguide is arranged in a further section of the optical waveguides,

wherein the decoupled check-back signal is directed via an opto-electric modulator and onwards via a gain controller to a narrow-band band-pass filter for isolating the narrow-band spectral range of the decoupled check-back signal and wherein there is a measuring module subsequent to the band-pass filter,

wherein the measuring module has an amplifier and a rectifier for determining the output level of the isolated narrow-band spectral range, and

wherein signals are emitted by the measuring module and by the gain controller to an evaluation unit for measuring the transmission attenuation using the determined value of the output level and the set amplification value in the gain controller.

Claim 30 (previously presented). The arrangement according to one of the claims 26, wherein a regenerator with subsequent decoding module with descrambler is attached to an exit of the gain controller to regenerate the decoupled signal.

Claim 31 (previously presented). The arrangement according to claim 30, wherein a coupler is placed in a further section of the optical waveguide for feeding in the regenerated decoupled signal.

Claim 32 (previously presented). The arrangement according to one of the claims 27, wherein a regenerator with subsequent decoding module with descrambler is attached to an exit of the gain controller to regenerate the decoupled signal.

Claim 33 (previously presented). The arrangement according to claim 32, wherein a coupler is placed in a further section of the optical waveguide for feeding in the regenerated decoupled signal.

Claim 34 (previously presented). The arrangement according to claim 26, wherein the components can be integrated in one or several decoupling lines of a monitoring channel with check-back signal used for network management, whereby, on the one hand, encoding module is connected in series to the coupler placed in the transmission system at the sending end and, on the other hand, the regenerator is connected in series to the decoding module.

Claim 35 (previously presented). The arrangement according to claim 27, wherein the components can be integrated in one or several decoupling lines of a monitoring channel with check-back signal used for network management, whereby, on the one hand, encoding module is connected in series to the coupler placed in the transmission system at the sending end and, on the other hand, the regenerator is connected in series to the decoding module.

Claim 36 (currently amended). The arrangement according to claim 26, wherein the ~~narrow-band~~ spectral range has 50% of the total output of the check-back signal issuing from the encoding module.

Claim 37 (currently amended). The arrangement according to claim 27, wherein the ~~narrow-band~~ spectral range has 50% of the total output of the check-back signal issuing from the encoding module.

Claim 38 (previously presented). The arrangement according to claim 26, wherein the output level can be detected or determined when the pump source arranged in the optical waveguide whether said pump source is switched on or off.

Claim 39 (previously presented). The arrangement according to claim 27, wherein the output level can be detected or determined when the pump source arranged in the optical waveguide whether said pump source is switched on or off.

Claim 40 (currently amended). An arrangement for implementing a method for detecting a check-back signal in an optical transmission system and for implementing a method for determining a line discontinuity in a transmission system, the arrangement comprising:

an optical waveguide for transmitting optical signals, wherein in a first section of the optical waveguide, a first coupler is arranged to couple a check-back signal, to which coupler an encoding module is connected in series for concentrating a constant proportion of the output of check-back signal in a ~~narrow-band~~ predetermined spectral range,

wherein in a further section of the optical waveguide, a decoupler is placed to bifurcate the check-back signal from the optical waveguide,

wherein the decoupled check-back signal is directed via an opto-electric modulator and further via a gain controller to a narrow-band band-pass filter for isolating the ~~narrow-band~~ predetermined spectral range of the decoupled check-back signal, ~~and~~

wherein a measuring module is subsequent to the band-pass filter, and

wherein a concentration of a constant proportion of the output of the check-back signal is created in the predetermined spectral range by evenly distributing ones and zeros from data of the check-back signal, followed by encoding.